1: Warner E-5 (1926-1929) 1937
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limb of the right size, hacking and pulling off the outer and inner bark with the axe and fingers, and then scraping the wood to the proper size with the axe and unhafted bivalve shell. 322

Flat wooden artifacts are formed by first splitting the cylinder in half and then splitting off a segment from the flat inner surface. Axe and shell are then used to hew the wood into the proper shape.

Hollow cylindrical objects are made by cutting down a tree eaten out by white ants, stripping outer and inner bark from it, and then cutting and scraping it with axe and shell to the form desired.

Bark Technique.—To remove thick bark from the trunk of a tree, a cut is made around the bottom of the tree, and another just below the forks of the tree. A split is then made with the axe down the side of the tree from top to the bottom and the bark pulled from the trunk. The outer bark is then stripped off. Processes vary from here on according to the artifact to be manufactured. The bark may be soaked in water or heated to bend it to the shape desired; sometimes, as in house building, only pressure is applied to it. 314

Paper bark (Melaleuca), the thin white bark of the ti tree found in Arnhem Land in the swamps and where the ground is moist the year round, is used in a number of ways. It is usually removed from the tree by taking the handle end of the spear-thrower and inserting it until it hits the trunk of the tree, then pulling down upon it in the same way that a knife would be used. Along the seacoast this bark does not enter so much into the culture as in the more distant interior, since sea shells offer better material for containers, largely because they are more easily prepared for use than the vegetable material.

Paper bark is used for water and honey containers, as a ladle for dipping water from the well, for pubic covering, mats, "blankets," cigarette paper, exterior covering for houses, tinder material for starting fire, the core of many totemic emblems, the "dunce cap" of the Gunabibi ceremony, and for many other daily uses.

Stone Technique.—The Murngin go to the interior for their spear heads and stone knives, or obtain them in trade. The techniques used are the same as those described in Spencer and Gillen's *Arunta*:[5] 324

Cements.—The Murngin have four varieties of adhesives. Ironwood resin is the principal cement used. The roots of the ironwood tree are cut into strips a few feet in length and heated over a fire. The sap is scraped from the sticks and collected on a central wooden core where it cools and hardens. When wanted for use it is heated again in a 314

[5] Spencer and Gillen, *The Arunta*, Macmillan, London, 1927, pp. 540-548.

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ARCHAEOLOGY AND THE GROUND STONE AXE

412 The ground stone axe is normally considered to be comparatively recent
174 in Australia because it is not distributed throughout the whole of the continent; it is not found in the southwestern part of Australia. Such evidence is not conclusive since the spear-thrower, which is looked upon as an old trait by many authorities, is not found in certain sections of southeastern Australia. It is largely because European stratification shows it to be more recent than the chipping or flaking techniques found in the Old Stone Age cultures in the sites of such countries as France and Spain that this assumption has been made for Australia. The stone axe is the only ground
●[324] stone implement found in Australia, for the knives, spear heads and similar tools and weapons are made by the chipping and flaking techniques. The Murngin possess this implement; the writer made a fairly large collection of them. The stone axe is little used by the people on the coast because they
[177] have acquired Malay iron axes and more recently European ones, but nevertheless they are still in use in the interior and occasionally along the coast.

172 Because the axe is stone and durable it gives one a good opportunity to use archaeological methods to study its approximate age in Murngin culture and possibly Australian civilization, since there were a number of large shell mounds distributed generally along the Murngin coast and in particular in the island of Millingimbi in the Crocodile group where the present Christian mission is now located. Two of these Millingimbi mounds were excavated by the writer with the help of aboriginal labor and mission picks and shovels.

The largest mound was located about one hundred yards or so from the shore and was shaped like the crater of a volcano with a rock water hole in its depths. This crater-like appearance was so real that the missionaries had called it Meteor Well because an explorer a year or two before my arrival had pronounced it the result of a meteor's fall. Actually, it was the result of human habitation spread around a clan well and the dropping of oyster and other shells around this water hole. This mound was about 425 feet long. The crater was approximately eighty-five to ninety feet across. The mound itself was eight feet wide and eight and one-half feet deep from its highest part to the earth's surface. It tapered off gradually to each side. The Murngin women were still adding shells to the heap by bringing to the water hole for opening baskets full of bivalves dug out of the mud flats along the coast or pried from the rocks of the oyster beds. The seacoast had a bountiful supply of shell food on this side of the island. A trench was sunk in the mound running from the outside to the center of the crater. It measured five feet in width and was excavated through the shell into a foot or more of earth, which gave a fair sampling of the site.

1: Warner E-5 (1926-1929) 1937
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the mangel type, but only about half of the wood at the place where the incision is made is cut away. Fiber string and resin form the hafting materials.

The cylindrical type of spear-thrower is not a hunting weapon, and is supposed to be carried only by old men, although young men have been observed using it. Its chief use is ceremonial. The leader of a totemic dance frequently directs the dances with it, using it as a baton as he keeps time to the rhythm. Sometimes this spear-thrower baton has red parrot feathers tied to the end of each piece of human hair string.

Spears

The spears possessed by the Murngin may be divided into four main types, according to the variety of heads possessed by each. They are: (1) stone, (2) wooden, (3) sting-ray prong, and (4) in the present day, iron.[2] The writer has chosen the above classification by material because each has a separate technique for its manufacture and because a classification by function would not divide the spears into different varieties, for all of them, with the exception of the third, are used in both fighting and hunting. Spears are used only by men and boys, never by women.

A. *Stone-pointed Spears.*—The length of the flaked-stone spear head has a norm of six inches and a variation of from three and a half to seven and a half inches. Its diameter at the upper end (widest part) is two inches, with a variation of from one and one-half to three inches. Some of the spear heads are serrated along the edges, but the majority are not. (The chipping technique is not applied to stone spear heads in this area, and is found only among the tribes centering around the Kimberley region of West Australia.) The peoples of the coastal plain obtain all their spear heads by trading with the table-land peoples in the interior.

The wooden shaft, usually of eucalyptus (but also of canes and mangrove wood), is normally about six feet long, and varies from five feet nine inches to nine feet in length. The diameter of the shaft is three-quarters of an inch. Its distal end is split in the center for about four to five inches to allow the stone head to be inserted. The stone and wood are then joined by a wrapping of fiber string and a secondary coating of native beeswax. The proximal end has a small hole bored in it. This serves as an articulation socket for the peg of the spear-thrower. For a distance of three to four inches each side of the hole, the shaft is wrapped with fiber string and coated with ironwood cement to prevent splitting.

All the shafts are smeared with red ocher, and eighteen inches of the distal ends is painted with white clay. The beeswax is likewise covered with pipe clay. Painting is for decoration only, and has no utilitarian or magical purpose.

B. *Wooden-headed Spears.*—Spears with wooden heads may be classified

[2] Not discussed here, for the reason that they form an exotic element in the culture.

1: Warner E-5 (1926-1929)1937
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252 This type of earth oven is made only for cooking larger animals. Fish, except minnows, are cooked on the open fire; minnows are carefully wrapped in paper bark and placed in the ash of a camp fire for cooking. A camp fire ordinarily used for cooking purposes is always made on a layer of earth taken from the nest of an ant bed. This earth is a kind of clay and holds its warmth longer.

Sometimes ground-fires for cooking are made by heaping a pile of stones in a hollowed-out spot and building a fire on them. After the stones are hot, paper bark and leaves are placed on them, the chunks of meat put in with bark and leaves over them, and the whole covered with sand and allowed to steam.

373 Pandanus palms are lighted to make a beacon for parties of canoes traveling at night in friendly country. They are also fired for certain totemic ceremonies.

322 To straighten a spear shaft, it is heated until the outside is smoked, then the maker holds the part of the shaft that is to be straightened between his two hands, places it against his knee, foot, or in his mouth, and pulls upon it. This process is repeated until, sighting along the shaft, it is seen to be straight.

304 Scarifications are made by pressing burning brands against the skin until the inner skin is burned through and a large welt formed. Ash is put inside the burn.[4]

412 *Stone Axe.*—All axes are of the ground-stone variety in this district, as they are everywhere throughout Australia except in the southwest.

They are made usually from smooth river stones. They normally weigh two and a quarter to three pounds, and vary from three to five inches in length, from two and one-half to four and one-half inches in width, and about one-half to one and a half inches in thickness at the larger end. The [324] axes are convex on both sides. The hafted end is usually slightly flaked to make a rough surface.

The stone blade is hafted to a wooden handle in the following manner: a small pliable stick is flattened on one side and bent in the middle so that the two ends meet. The axe head at the hafting end has been covered with beeswax. The stick is bent over the head and wrapped tightly with fiber string near the stone blade to hold it in place. Sometimes a pandanus circlet is plaited about the hafting instead of cord being used.

[324] The stone is ground to a sharp edge. The surface sometimes is ground only along the edge, but usually grinding extends to the border of the portion covered by the beeswax.

The handle is from ten to sixteen inches in length, but the norm is thirteen inches.

177 The Malays brought the steel axe for trading purposes and the white man has continued this process, so that the stone axe is seldom made today.

[4] Scarification is also produced by cutting.

9: Thomson E-5 (1935–1943) 1949
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Plate 1. A craftsman at ŋillipidji, the far-famed stone spear quarry in the hinterland of Blue Mud Bay, examining flint spear heads called *ŋämbi*. These spear heads are encased in a special sheath of paperbark (*Melaleuca*) to which the name *djalk* is applied, which gives its name to *ḳumur djalk*, the quarter in the ceremonial exchange cycle from which most of these fine spear heads enter North and Central Arnhem Land. On the left are two bundles each containing about a dozen *ŋämbi*, neatly wrapped in paperbark, ready for transport inland for *wetj*, as goodwill presents for partners within the ceremonial exchange cycle. The smooth stone implements on the left are the hammer stones used by the spear maker to strike off flakes from a core of flint dug out of the quarry.

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114 ture of the natives of North-eastern Arnhem Land showed
177 a resistance to the influence of this virile culture from Indonesia, and certainly none for the statement that the ideas of these people were "no different from what they were before he (the Malay seafarer) arrived . . ."

121 I do not propose here to attempt a full review of the in-
177 fluence of the Indonesian culture on the ceremonial life of these people, but merely to show its effect on the ceremonial exchange cycle and the economic system which accompanies it.

177 That this influence was extensive is proved beyond ques-
192 tion by the fact (see pp. 67, 68f) that the term *muadäk*,
431 which gives its name to *kumur muadäk*, the northern sec-
439 tor of the exchange cycle, is the collective or generic name given by the natives to all the *gerri* which they obtained formerly from the Macassar visitors, of which the chief items are knives, axes of the type called *luŋa linya*, nails (for fish hooks etc.), fish hooks and lines, bottle glass (for scrapers), tobacco, smoking pipes (*pämatukka*), belts, wooden dugout canoes, (*lippa lippa*), beads, (*männi-männi*), and material such as calico, blankets, string and later, wool, to which the collective term *mäthäkäl* was applied.

114 When Professor Warner contrasts the ease with which an
● 324 Arnhem Land native acquired an iron axe from the Malays,
135 with the labour involved in the making of the (admittedly)
431 much less efficient and satisfactory stone axe, he overlooks
463 certain important factors. First, that stone axes, like flint spear heads, are made from special stone which occurs only in restricted areas, and that while any man who merely uses an axe to get wild honey, can grind the edge, the implement itself is usually made initially by a craftsman, a specialist in the working of the stone who lives in the country in which it occurs, and like the smooth hard

pounding stones called *poipuro* (page 71) it is exported as *gerri* within the ceremonial exchange system.

It is part of my thesis to show that an important function served by the ceremonial exchange cycle is in supplying this incentive, this motive for fine craftsmanship, the anticipation of the ritual and pageantry, by adding romance or "glamour" to work which would otherwise be drudgery. A man does not as a rule set out to manufacture a stone axe as he may a fish spear or a hunting spear, to satisfy an immediate need. Such an implement requires hours, even days, of grinding and polishing after the preliminary rough shaping of the hard stone. But, as it has been pointed out, these axes are made by a craftsman who probably learned the craft from his father and are accumulated as *gerri* which will be presented on some future ceremonial occasion to "pay back" a present that the maker has received from one of his exchange partners, or they are used to create an obligation which his partner will later discharge.

The stone quarry at ŋillipidji where *ŋämbi lirra* are made, covers acres of ground, and hundreds, perhaps thousands, of spear heads come from the quarry in the course of a year. Like the stone axe heads, these flint heads are not made for immediate use, but are passed from Wagilläk territory—in bundles of a dozen or so, each wrapped neatly in the paperbark sheath called *djalk*—to reciprocate ceremonial presents of *muadäk*, or to build up goodwill and prestige. Big bundles are sent north and north-west, in the knowledge that they will be reciprocated ultimately with other *gerri* of a traditional kind and of at least equivalent value.

From the orientation of a man of Mildjiŋi clan of the Glyde River, the people to the north who occupy the territory along the northern shoreline, at Glyde Inlet, and Banyan